Section 1. Registration Information

Source Identification

Facility Name:	Cold Regions Research and Engineering Lab
Parent Company #1 Name:	US Government
Parent Company #2 Name:	USACE

Submission and Acceptance

Submission Type:	Re-submission
Subsequent RMP Submission Reason:	5-year update (40 CFR 68.190(b)(1))
Description:	
Receipt Date:	23-Sep-2010
Postmark Date:	23-Sep-2010
Next Due Date:	23-Sep-2015
Completeness Check Date:	23-Sep-2010
Complete RMP:	Yes
De-Registration / Closed Reason:	
De-Registration / Closed Reason Other Text:	
De-Registered / Closed Date:	
De-Registered / Closed Effective Date:	
Certification Received:	Yes

Facility Identification

EPA Facility Identifier:	1000 0015 3184
Other EPA Systems Facility ID:	

Dun and Bradstreet Numbers (DUNS)

Facility DUNS:	187155056
Parent Company #1 DUNS:	
Parent Company #2 DUNS:	

Facility Location Address

Street 1:	72 Lyme road
Street 2:	
City:	Hanover
State:	NEW HAMPSHIRE
ZIP:	03755
ZIP4:	
County:	GRAFTON

Facility Latitude and Longitude

Latitude (decimal):	43.724690
Longitude (decimal):	-072.272940
Lat/Long Method:	GPS Code Measurements (Psuedo Range) Differential (DGPS)
Lat/Long Description:	Center of Facility
Horizontal Accuracy Measure:	1
Horizontal Reference Datum Name:	World Geodetic System of 1984
Source Map Scale Number:	

Owner or Operator

Operator Name:	US. Army CRREL
Operator Phone:	(603) 646-4602

Mailing Address

Operator Street 1:	72 Lyme road
Operator Street 2:	
Operator City:	Hanover
Operator State:	NEW HAMPSHIRE
Operator ZIP:	03755
Operator ZIP4:	
Operator Foreign State or Province:	
Operator Foreign ZIP:	
Operator Foreign Country:	

Name and title of person or position responsible for Part 68 (RMP) Implementation

RMP Name of Person:	Byron L. Young
RMP Title of Person or Position:	Environmental Protection Specialist
RMP E-mail Address:	Byron.L.Young@erdc.usace.army.mil

Emergency Contact

Emergency Contact Name:	Larry Danyluk
Emergency Contact Title:	Chief, Eng. For DPW
Emergency Contact Phone:	(603) 646-4475
Emergency Contact 24-Hour Phone:	(603) 646-4800
Emergency Contact Ext. or PIN:	
Emergency Contact E-mail Address:	N/A

Other Points of Contact

Facility or Parent Company E-mail Address:	
Facility Public Contact Phone:	(603) 646-4400
Facility or Parent Company WWW Homepage Address:	N/A

Local Emergency Planning Committee

LEPC:	Hanover LEPC

Full Time Equivalent Employees

Number of Full Time Employees (FTE) on Site:	327
FTE Claimed as CBI:	

Covered By

OSHA PSM :	Yes
EPCRA 302 :	Yes
CAA Title V:	Yes

Air Operating Permit ID:	GSP-EG-166

OSHA Ranking

OSHA Star or Merit Ranking:	

Last Safety Inspection

Last Safety Inspection (By an External Agency) Date:	01-Jun-2003
Last Safety Inspection Performed By an External Agency:	EPA

Predictive Filing

Did this RMP involve predictive filing?:	

Preparer Information

Preparer Name:	Byron L. Young
Preparer Phone:	(603) 646-4602
Preparer Street 1:	72 Lyme rd.
Preparer Street 2:	
Preparer City:	Hanover
Preparer State:	NEW HAMPSHIRE
Preparer ZIP:	03755
Preparer ZIP4:	
Preparer Foreign State:	
Preparer Foreign Country:	
Preparer Foreign ZIP:	

Confidential Business Information (CBI)

CBI Claimed:	
Substantiation Provided:	
Unsanitized RMP Provided:	

Reportable Accidents

Reportable Accidents:	See Section 6. Accident History below to determine if there were any accidents reported for this RMP.

Process Chemicals

Process ID:	1000018765
Description:	Ammomia Refrigeration
Process Chemical ID:	1000022269
Program Level:	Program Level 3 process
Chemical Name:	Ammonia (anhydrous)
CAS Number:	7664-41-7
Quantity (lbs):	20000
CBI Claimed:	
Flammable/Toxic:	Toxic

Process NAICS

Process ID:	1000018765
Process NAICS ID:	1000019107
Program Level:	Program Level 3 process
NAICS Code:	92119
NAICS Description:	Other General Government Support

Section 2. Toxics: Worst Case

Toxic Worst ID: 1000014836

Percent Weight:	99.9
Physical State:	Gas liquified by pressure
Model Used:	Areal Locations of Hazardous Atmospheres [ALOHA(R)]
Release Duration (mins):	11
Wind Speed (m/sec):	1.5
Atmospheric Stability Class:	F
Topography:	Rural

Passive Mitigation Considered

Dikes:	
Enclosures:	
Berms:	
Drains:	
Sumps:	
Other Type:	

Section 3. Toxics: Alternative Release

Toxic Alter ID: 1000016365

Percent Weight:	99.9
Physical State:	Gas liquified by pressure
Model Used:	Areal Locations of Hazardous Atmospheres [ALOHA(R)]
Wind Speed (m/sec):	1.0
Atmospheric Stability Class:	E
Topography:	Rural

Passive Mitigation Considered

Dikes:	
Enclosures:	
Berms:	
Drains:	
Sumps:	
Other Type:	

Active Mitigation Considered

Sprinkler System:	
Deluge System:	
Water Curtain:	
Neutralization:	
Excess Flow Valve:	
Flares:	
Scrubbers:	
Emergency Shutdown:	
Other Type:	

Section 4. Flammables: Worst Case

No records found.

Section 5. Flammables: Alternative Release

No records found.

Section 6. Accident History

No records found.

Section 7. Program Level 3

Description

Initiate Process management Compliance Committee and enlisted an outside consultant in 2001 to review process and procedures. After audit of facility recommendations were presented to the Process Management Compliance Committee.

Program Level 3 Prevention Program Chemicals

Prevention Program Chemical ID:	1000018481
Chemical Name:	Ammonia (anhydrous)
Flammable/Toxic:	Toxic
CAS Number:	7664-41-7
Prevention Program Level 3 ID:	1000015457
NAICS Code:	92119

Safety Information

Safety Review Date (The date on which the safety information was last reviewed or revised):	11-Aug-2008

Process Hazard Analysis (PHA)

PHA Completion Date (Date of last PHA or PHA update):	10-May-2010

The Technique Used

What If:	
Checklist:	
What If/Checklist:	Yes
HAZOP:	
Failure Mode and Effects Analysis:	
Fault Tree Analysis:	
Other Technique Used:	
PHA Change Completion Date (The expected or actual date of completion of all changes resulting from last PHA or PHA update):	31-Dec-2010

Major Hazards Identified

Toxic Release:	Yes
Fire:	
Explosion:	
Runaway Reaction:	
Polymerization:	
Overpressurization:	
Corrosion:	
Overfilling:	
Contamination:	
Equipment Failure:	Yes
Loss of Cooling, Heating, Electricity, Instrument Air:	Yes
Earthquake:	

Floods (Flood Plain):	
Tornado:	
Hurricanes:	
Other Major Hazard Identified:	

Process Controls in Use

Vents:	Yes
Relief Valves:	Yes
Check Valves:	Yes
Scrubbers:	
Flares:	
Manual Shutoffs:	Yes
Automatic Shutoffs:	Yes
Interlocks:	Yes
Alarms and Procedures:	Yes
Keyed Bypass:	
Emergency Air Supply:	
Emergency Power:	
Backup Pump:	
Grounding Equipment:	Yes
Inhibitor Addition:	
Rupture Disks:	
Excess Flow Device:	
Quench System:	
Purge System:	
None:	
Other Process Control in Use:	

Mitigation Systems in Use

Sprinkler System:	
Dikes:	
Fire Walls:	
Blast Walls:	
Deluge System:	
Water Curtain:	
Enclosure:	
Neutralization:	
None:	Yes
Other Mitigation System in Use:	

Monitoring/Detection Systems in Use

Process Area Detectors:	Yes
Perimeter Monitors:	Yes
None:	
Other Monitoring/Detection System in Use:	

Changes Since Last PHA Update

Reduction in Chemical Inventory:	
Increase in Chemical Inventory:	
Change Process Parameters:	
Installation of Process Controls:	Yes

Installation of Process Detection Systems:	Yes
Installation of Perimeter Monitoring Systems:	
Installation of Mitigation Systems:	
None Recommended:	
None:	
Other Changes Since Last PHA or PHA Update:	

Review of Operating Procedures

Operating Procedures Revision Date (The date of the most recent review or revision of operating procedures):	26-Jul-2010

Training

Training Revision Date (The date of the most recent review or revision of training programs):	10-Nov-2009

The Type of Training Provided

Classroom:	Yes
On the Job:	Yes
Other Training:	

The Type of Competency Testing Used

Written Tests:	Yes
Oral Tests:	Yes
Demonstration:	Yes
Observation:	Yes
Other Type of Competency Testing Used:	

Maintenance

Maintenance Procedures Revision Date (The date of the most recent review or revision of maintenance procedures):	10-Nov-2009
Equipment Inspection Date (The date of the most recent equipment inspection or test):	24-Sep-2009
Equipment Tested (Equipment most recently inspected or tested):	Machine room equipement including compressors and piping.

Management of Change

Change Management Date (The date of the most recent change that triggered management of change procedures):	04-Aug-2010
Change Management Revision Date (The date of the most recent review or revision of management of change procedures):	23-Oct-2009

Pre-Startup Review

Pre-Startup Review Date (The date of the most recent pre-startup review):	15-Apr-2010

Compliance Audits

Compliance Audit Date (The date of the most recent compliance audit):	27-Feb-2008
Compliance Audit Change Completion Date (Expected or actual date of completion of all changes resulting from the compliance audit):	31-Jan-2011

Incident Investigation

Incident Investigation Date (The date of the most recent incident investigation (if any)):	23-Apr-2008
Incident Investigation Change Date (The expected or actual date of completion of all changes resulting from the investigation):	31-Dec-2010

Employee Participation Plans

Participation Plan Revision Date (The date of the most recent review or revision of employee participation plans):	07-Jul-2010

Hot Work Permit Procedures

Hot Work permit Review Date (The date of the most recent review or revision of hot work permit procedures):	22-Sep-2010

Contractor Safety Procedures

Contractor Safety Procedures Review Date (The date of the most recent review or revision of contractor safety procedures):	11-Aug-2008
Contractor Safety Performance Evaluation Date (The date of the most recent review or revision of contractor safety performance):	11-Aug-2008

Confidential Business Information

CBI Claimed:

Section 8. Program Level 2

No records found.

Section 9. Emergency Response

Written Emergency Response (ER) Plan

Community Plan (Is facility included in written community emergency response plan?):	Yes
Facility Plan (Does facility have its own written emergency response plan?):	Yes
Response Actions (Does ER plan include specific actions to be taken in response to accidental releases of regulated substance(s)?):	Yes
Public Information (Does ER plan include procedures for informing the public and local agencies responding to accidental release?):	Yes
Healthcare (Does facility's ER plan include information on emergency health care?):	Yes

Emergency Response Review

Review Date (Date of most recent review or update of facility's ER plan):	21-Jul-2010

Emergency Response Training

Training Date (Date of most recent review or update of facility's employees):	24-Jun-2010

Local Agency

Agency Name (Name of local agency with which the facility ER plan or response activities are coordinated):	Hanover Fire and Police Dept.
Agency Phone Number (Phone number of local agency with which the facility ER plan or response activities are coordinated):	(603) 643-3424

Subject to

OSHA Regulations at 29 CFR 1910.38:	Yes
OSHA Regulations at 29 CFR 1910.120:	Yes
Clean Water Regulations at 40 CFR 112:	Yes
RCRA Regulations at CFR 264, 265, and 279.52:	Yes
OPA 90 Regulations at 40 CFR 112, 33 CFR 154, 49 CFR 194, or 30 CFR 254:	
State EPCRA Rules or Laws:	Yes
Other (Specify):	

Executive Summary

Executive Summary

The accidental release prevention and emergency response policy at the ERDC-CRREL facility.

It is the policy of ERDC-CRREL that we will maintain the capability, equipment and training to respond to and mitigate an accidental release of Anhydrous Ammonia. This will be done in coordination with local emergency responders and is incorporated into the LEPCÂ¿s Emergency Response Plan. This policy is supported by senior management at the Laboratory by supporting the membership on the LEPC and by providing the financial resources, time and training to obtain and maintain a response capability.

Our facility and the regulated substances handled.

The US Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL) is located approximately two miles north of the center of Hanover, NH. The laboratory conducts research in many aspects of basic cold regions properties and engineering structures and systems subjected to cold, snow, ice and permafrost. The 30 acre site is bordered on the north and south by small housing areas, to the west by a narrow buffer of undeveloped land and the Connecticut River and on the east by a state highway and public school facility. Within a half mile radius, there are additional housing complexes, office buildings, the Hanover Fire and Police Department, and Emergency Medical Response complex, a nursing home, and a few small businesses. Several separate refrigeration systems are operated at CRREL, most of which use ethylene glycol as the refrigerant. However, one system used in the Ice Engineering Facility (IEF) uses anhydrous ammonia as the primary refrigerant. Ammonia is an EPCRA Extremely Hazardous Substance with a Threshold Planning Quantity of 10,000 pounds. The IEF system has a capacity in excess of the TPQ of potentially 20,000 pounds and as such is subject to EPCRA tier II reporting as well as the Risk Management Planning requirements. No other EHSÂ¿s above the TPQ exist at CRREL.

The worst case release scenario and the alternative release scenario.

The worst case release scenario was obtained by using the EPA RMP*Comp and ALOHA computer models. With the anhydrous ammonia system, the analysis showed that a 1330 lb/ min release for 11 minutes would affect a 1.2 mile radius around the release, which would necessitate evacuation of the residences and businesses within that zone. However, because of the nature of the system, it is considered extremely unlikely that a release of this magnitude could occur. This is because the ammonia is not concentrated in a single tank or vessel, but two seperate vessels and is disbursed throughout a complicated system of pipes, valves, pressure vessels, and other machinery. Simultaneous failure of all the related machinery at the same time is extremely unlikely other than under extreme catastrophic conditions.

An alternative scenario was based on an actual incident and used the release rate and duration of the incident. This showed that the effects of the release would not go past the IEF building. Passive measures in effect for either scenario include sensors and alarms. In either case, it is expected that we will be dealing with vapor rather than liquid.

The general accidental release prevention program and chemical-specific prevention systems.

CRREL is in full compliance with the Process Safety Management program using established OSHA guidance found in 29 CFR 1910.119. This includes but not limited to Process Hazard Analysis of the ammonia refrigeration system, established written SOPÂ¿s and maintenance guidance, upgraded facility drawings, valve and equipment identification and tagging, upgraded detection and alarm equipment and improved control systems. Regular meetings are conducted between users/researchers and maintainers/responders of the buildingÂ¿s equipment to ensure coordination of both experimental efforts and scheduling of maintenance or replacement of equipment.

The five year accident history

No releases have occurred in the last five years in reportable quantities as defined by EPCRA section 304 of 100 pounds. Minor nuisance leaks from valve packing and associated equipment during normal system cycling on/off procedures or maintenance operations have been experienced.

Historical accident history

A reportable release occurred 7 Dec. 1996 when a small fitting broke due to vibration. The Hanover Fire Department was notified and was on the scene and assumed incident command as per the Emergency Response Plan in less then five minutes. CRREL personnel made a level Â¿AÂ¿ entry and stopped the leak. Mitigation in the form of fans and venting was performed. Total quantity lost was between 300 to 500 pounds of ammonia, duration of the incident was approximately two hours and there were no injuries or property damage other than the equipment malfunction which caused the incident.

A reportable incident occurred on 13 Jan 1996 when ammonia was reported leaking through storm drain manholes and HFD and the CRREL response team were summoned. Based on concentration levels and locations, the incident commander decided to flush the drains. After a period of time, the ammonia levels dropped and the incident Commander secured the scene. Approximately an hour later, ammonia odors were again reported and the flushing was resumed with additional diagnosis and measurements. The problem was finally isolated and contained and the operation secured. The problem was traced to a malfunctioning alarm and its associated shut down device. During the incident, two HFD and one CRREL person received medical attention for exposure to ammonia. All returned to duty after treatment. There was no evacuation and no property damage reported. The incident lasted approximately nine hours and it is estimated that about 2000 pounds of ammonia were lost.
As a result of these incidents, EPA Region I conducted an accident prevention investigation on 2 July 1996. They found CRRELÂ¿s preventative measures and response to the incidents adequate and recommended that the OSHA PSM which had already been initiated be continued. Other than minor losses during maintenance and from occasional packing leaks, there have been no further accidents.

The Emergency Response Plan

CRREL has been a member of the EPCRA Hanover/Lebanon Local Emergency Planning Committee since its inception. Early in the process, it was recognized that there were no local resources available to respond to a major ammonia release from CRREL, other than for isolation and evacuation. At the time, CRREL made a commitment to develop an in-house response team. All necessary equipment and HAZMAT training was obtained. A key element of the response program was that the Hanover Fire Department would retain incident command for any release. HFD is about 0.25 miles from CRREL, so a close working relationship has been developed. Frequent visits and familiarization with CRREL personnel and facilities during HAZMAT response drills continues to occur. HAZMAT response refresher training is conducted twice a year using various scenarios and response participants.

Planned changes to improve safety

OSHA Process Safety Management activities remain ongoing. Management of Change per 29 CFR 1910.119(l) (1) is implemented whenever organizational and personnel changes occur. MOC actions necessitate an in-depth review of response capabilities and renewed discussions with HFD regarding their role in response actions if warranted. All HAZMAT training exercises are evaluated and improvements to the overall program and response effort are implemented on a continuous basis.